4K95-52

THE NORTH ALASKA PENINSULA SALMON REPORT

Report to the Alaska Board of Fisheries

By:

Robert L. Murphy

Regional Information Report[1] No. 4K95-52

Alaska Department of Fish and Game
Commercial Fisheries Management and Development Division
211 Mission Road
Kodiak, Alaska 99615

December 1995

---

[1]The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished division reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data; this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author or the Division of Commercial Fisheries.

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

The North Peninsula area of the Alaska Peninsula Salmon Management Area extends from Cape Sarichef on Unimak Island east to Cape Menshikof which borders Bristol Bay (Area T; Figure 1). This report describes those fisheries that are located on the North Peninsula which consists of two districts: 1) the Northwestern District encompasses the coastal waters from Cape Sarichef to Moffet Point, and 2) the Northern District from Moffet Point to Cape Menshikof.

Legal gear types in the Northwestern and Northern Districts are purse seine (also hand purse seine), and drift and set gillnet (ADF&G 1995). The majority of the salmon harvest occurs in the Northern District, specifically within the area from Nelson Lagoon to Strogonof Point (Figure 2). Within this area, many gear restrictions apply: the Nelson Lagoon Section is open to set and drift gillnet gear only, the Bear River Section to seine and drift gillnet gear, the Three Hills Section to drift gillnet gear only, and the Ilnik Section to set and drift gillnet gear.

The commercial salmon fishing season opens in most of the Northwestern District on June 1, and in parts of the Northern District on May 1. Generally, the further east in the Northern District, the later the opening date. Weekly fishing periods occur in most areas and are usually either 6:00 a.m. Monday to 6:00 p.m. Wednesday (2.5 days/week) or 6:00 a.m. Monday to 6:00 p.m. Thursday (3.5 days/week; Table 1). Modifications to weekly fishing periods occur inseason by emergency order.

Escapement into local salmon systems determines commercial fisheries openings, closings, and duration. Sockeye salmon are the primary species of harvest on the North Peninsula. During June 1 through September 15 within the Nelson Lagoon to Strogonof Point area, management emphasis is on four sockeye systems, Nelson, Bear, Sandy, and Ilnik Rivers. Nelson and Bear Rivers are the dominant systems. Alaska Department of Fish and Game (ADF&G) weir camps located at these four systems provide daily escapement enumeration used to manage commercial fisheries.

ESCAPEMENT BY SPECIES

There are 62 annually surveyed salmon systems in the North Peninsula, with chinook salmon found in 10 systems, sockeye salmon found in 32 (Murphy 1992), coho salmon have been documented in at least 13 systems, pink salmon in 11 systems, and chum salmon annually surveyed in 38 systems with an estimated 52 systems known to support chum salmon (Figure 3).

Chinook

Chinook salmon escapement occurs almost entirely within the Northern District. The Northwestern District has only one documented chinook salmon stream while 9 systems are found in the Northern District (Figure 3). The bulk of the escapement occurs in the Nelson, Meshik, and Cinder River systems.

Sockeye

Of the 32 sockeye salmon systems on the North Peninsula, 14 are found in the Northwestern District and 18 in the Northern District (Figure 3). The North Peninsula 1976-95 average sockeye indexed escapement was 934,000 fish, while the 1986-95 average escapement was 907,000 fish, and the 1991-95 average 1,094,000 fish (Figure 4). The majority of the sockeye escapement occurs in the Northern District's main systems (Bear, Nelson, Sandy, and Ilnik Rivers). In 1994 and 1995, significant sockeye salmon escapement (> 100,000) was observed north of Strogonof Point in the Meshik (Inner Port Heiden) and Cinder River systems combined (Table 2).

Sockeye salmon are abundant from Nelson Lagoon to Strogonof Point in June, July, August, and September. Escapement goals for the main systems with the 1991-95 average escapement are listed in Table 3. The Nelson River sockeye run begins in mid June, peaks in early July, and is over by mid August; Bear River supports two distinct runs: an early run that begins in early June, peaks in early July, and ends in late July; and the late run which begins in late July, peaks in early-mid August, and is over in mid to late September; Sandy River run timing begins in mid June, peaks in late June, and ends in late July; and Ilnik River run timing is early and closely parallels Bear River early run timing.

Return Per Spawner Data

In the Port Moller to Strogonof Point area, local (except the late run into Bear River) and nonlocal sockeye runs are considered complete prior to August 1. Apportioning the commercial catch to stock of origin prior to August 1 requires a method to determine stock specific catches in a mixed stock fishery.

Run reconstruction can be completed on the late Bear River run by combining the catch and escapement by age to respective brood year after August 1. Using this information for fully recruited brood years, reliable return per spawner (R/S) estimates are generated. However, this approach is not feasible for application prior to August. Therefore, in order to calculate the run potential for early Bear, Nelson, Sandy, and Ilnik Rivers, an alternative source of R/S data is needed. Some of the most complete R/S data available is from neighboring systems within Bristol Bay. The 1985-89 average R/S, which are the most recent brood years available, from the Kvichak, Naknek, Egegik, and Ugashik Rivers combined was employed for calculating the run potential for the previously mentioned North Peninsula early run systems. The recent 5-year return per spawner data (1985-89) is used because these years produced the 1991-95 returns. The following are the combined R/S values for the aforementioned Bristol Bay systems spanning the 1980-89 and 1985-89 time frames along with the late Bear River values for comparison.

	Bristol Bay	Late Bear River
1980-89 R/S average =	3.88	5.05
1985-89 R/S average =	4.91	7.50

In the absence of early run North Peninsula R/S data, an alternative method to estimate possible North Peninsula production is to use R/S data from neighboring Bristol Bay. This approach was chosen for comparative purposes only and the estimates do not represent actual North Peninsula production for the time period. Actual North Peninsula production is unknown.

The value of 4.91 (recent five year Bristol Bay average), was used to calculate the run potential for early North Peninsula systems. The value of 7.50 (1985-89 late Bear River R/S average) was used for estimating the late Bear River run potential. The 80% confidence intervals for these averages were generated to provide ranges for comparative purposes. Bristol Bay R/S ranges from 4.04 to 5.80 with a mean of 4.91. The Bear River late run R/S ranges from 5.81 to 9.13 with a mean of 7.50. The run timing of local stock fish by five day interval that may be present in local commercial fisheries is presented in Table 4. The potential run size bound for these four systems for the entire season would be expected to range from 3.8-5.6 million sockeye with a midpoint of 4.7 million sockeye (Table 4; Figure 5). The estimated run potential prior to July 20 would be expected to range from 2.7-3.8 million sockeye (Table 4). The run potential depicted in Table 4, includes the escapement. To determine the annual potential harvest, the escapement (which has averaged 865,000 sockeye for these four North Peninsula systems from 1991-95) would be subtracted from the run potential. Therefore, the harvest potential for the early and late Bear, Sandy, Ilnik and Nelson Rivers would be theoretically expected to range from 2.9-4.7 million sockeye.

This exercise is intended to be used as an index of potential sockeye production from four North Peninsula sockeye systems based on R/S from neighboring Bristol Bay and the late Bear River run.

Coho

Coho salmon systems are almost in equal abundance in the Northwestern District (7) and Northern District (6; Figure 3). Many systems have not been surveyed for coho salmon, and therefore, the number of coho systems listed is considered minimum. Due to inadequate funding and fall weather conditions, very few surveys are flown to adequately determine coho salmon abundance. Only in 1990 was an adequate North Peninsula assessment attempted. Previous escapement counts indicate that North Peninsula coho escapement range from about 140,000-300,000 fish (Table 5). The major coho salmon systems are the Cinder, Meshik (Port Heiden), Ilnik, and Nelson Rivers. Coho salmon runs also exist in Urilia Bay, Swanson Lagoon, Moffet Bay, Bear River, and Sandy River.

Pink

Pink salmon are usually of only limited economic importance in the North Peninsula. However, in some areas they may be economically important. The average 1976-95 pink salmon escapement is 50,000 fish and ranged from 100 (1987) to 208,000 (1992; Table 5). Bechevin Bay is usually the largest pink salmon producing location. Herendeen Bay produced substantial pink salmon runs in 1990 and 1992.

Chum

Chum salmon systems are the most abundant of all salmon systems. There are at least 52 systems with chum salmon, however only 38 are annually surveyed. Escapement from 1976-95 averaged 442,000 salmon, with the 1986-95 average of 389,000 fish. The chum salmon indexed escapement goal is 350,000-700,000 fish. Due to market conditions, and the purse seine fleet often concentrating on South Peninsula and Aleutian pink salmon, North Peninsula chum salmon are under exploited in some years.

HARVEST BY SPECIES

Chinook

The 1976-95 chinook salmon harvest averaged 16,000 fish, which is slightly above the 1986-95 average of 14,000. The range during this period was from 5,000 (1976) to 30,000 (1982; Table 5). Most of the annual harvest occurs in the Northern District, with the majority of the harvest occurring in the Port Heiden, Nelson Lagoon, and Bear River Sections.

Sockeye

The 1976-95 average sockeye harvest in the North Peninsula was 2,014,000, the 1986-95 average harvest was 2,520,000, and the 1991-95 average harvest was 3,172,000 fish (Table 5; Figure 6). The record harvest occurred in 1993, when 3,866,600 fish were harvested of which 88% (3,331,900) were taken in the Port Moller to Strogonof Point area. The bulk of the North Peninsula harvest occurs in the Nelson Lagoon to Strogonof Point area, with a substantial portion of this harvest occurring in the Port Moller to Strogonof Point area (Bear River, Three Hills, and Ilnik Sections; Table 2; Figure 2).

In Nelson Lagoon, the 1976-95 average sockeye harvest was 286,000, the 1986-95 average harvest of 311,000 fish, and the 1991-95 average harvest of 377,000 fish (Figure 7). Annually, between 30-40 permit holders typically fish the section, the majority of the gear is set gillnet. The peak weekly sockeye harvest typically occurs in early to mid July, as occurred in 1995 (Figure 8).

The 1976-95 average sockeye harvest in the Port Moller to Cape Seniavin, which includes the Bear River and Port Moller Bight Sections (the Port Moller Bight Section is usually fished by one or two set gillnet operators), reach was 914,000 fish, the 1986-95 average was 1,017,000 fish, and the 1991-95 average was 1,418,000 fish (Figure 9). The number of permits fished in the Bear River Section has stabilized over the past 10 years to an average of 164 permits fished per year, above the 1976-95 average of 139 permits (Figure 10). The peak weekly harvest in the Port Moller to Cape Seniavin area usually occurs in late June and early July and decreases slightly with another peak in mid August as occurred in 1995. Sockeye catches in the Port Moller to

Cape Seniavin reach in 1995 remained consistent from early July through early September, with only minor fluctuations during this period (Figure 11).

In the Cape Seniavin to Strogonof Point reach (encompassing the Three Hills and Ilnik Sections) the 1976-95 average sockeye harvest was 710,000, the 1986-95 average was 1,073,000 fish, and the 1991-95 average was 1,284,000 fish (Figure 9). The number of permits fished in the Three Hills Section began to increase in 1983 and 1984 with the 1986-95 average number of permits fished within this section of 132, up from the 1976-95 average of 97 (Figure 10). In the Ilnik Section, the number of permits began to increase in 1983 with the 1986-95 average number of permits fished in the section of 137, up from the 1976-95 average of 90 (Figure 10). The number of permits fished in these sections has stabilized since the increase in 1983 and 1984. Catches within the Cape Seniavin to Strogonof Point reach typically peak during early and mid July, then decrease as observed in 1995 (Figure 11).

Prior to 1983, the Bear River Section accounted for the majority of the harvest in the Port Moller to Strogonof Point area (includes the Port Moller Bight, Bear River, Three Hills, and Ilnik Sections; Figure 12). Since 1986, the Bear River Section averaged 49% of the total sockeye harvest within these three sections combined. From 1986-95, the Three Hills Section averaged 23% of the sockeye harvest within the Bear River, Three Hills, and Ilnik Sections combined, while the Ilnik Section averaged 28%

Coho

The majority of the North Peninsula coho harvest occurs in the Northern District, specifically in Nelson Lagoon, Cinder River, Inner Port Heiden, Bear River, and Ilnik (mainly Ilnik Lagoon) Sections (Table 6). The 1976-95 average North Peninsula harvest was 197,000 fish, with the 1986-95 average harvest of 186,000, and the 1991-95 average of 173,000 coho salmon. The harvest has ranged from 64,300 in 1993 to 241,200 in 1994. Coho catches typically commence during the first week of August, peak during the last 10 days of August and first week of September, and end in mid to late September.

Pink

The 1976-95 average pink salmon harvest was 50,000 fish, below the 1986-95 average harvest of 62,000 fish with a range from 1,000 (1977) to 518,000 (1990; Table 5). Directed pink salmon fisheries occur in Bechevin Bay in the Northwestern District and occasionally Herendeen Bay in the Northern District.

Chum

The 1976-95 average chum salmon harvest of 309,000 fish, is above the 1986-95 average of 220,000 fish and ranged from 66,000 (1979) to 797,000 (1984; Table 5). In the Northwestern District, the bulk of the harvest usually occurs in the Izembek-Moffet Bay Section, with

occasional substantial harvests occurring in Bechevin and Urilia Bays, and Swanson Lagoon. In the Northern District, the Herendeen-Moller Bay and Bear River Sections typically dominate the catch.

AREA M AND AREA T OVERLAP AREA

The Area M (Alaska Peninsula) and Area T (Bristol Bay) overlap area consists of the Cinder River Section, Inner Port Heiden Section, and Ilnik Lagoon. The overlap area was created shortly after statehood to allow Area T permit holders the opportunity to fish within traditional harvest locations of Area M. Port Heiden Area T permit holders fished for chinook and coho salmon in the Inner Port Heiden Section and Pilot Point Area T permit holders fished inside the Cinder River Section for chinook and coho salmon (and occasionally small numbers of sockeye salmon) and still participated in Bristol Bay salmon fisheries.

All of the recent effort (from about 1985-95) in the Cinder River Section is from Area T permit holders. During every month except July, Area T permit holders are allowed to fish during the open season in the Inner Port Heiden and Cinder River Sections (Figure 13). Area T permit holders are also allowed to fish inside Ilnik Lagoon during August and September. Prior to 1990, Area T permit holders were allowed to fish in the entire Ilnik Section outside of Ilnik Lagoon during August and September.

Since 1976, when 16 Area T permit holders fished the overlap area, the number of Area T permit holders that have fished within this area increased and peaked in 1992 with 122 permits (104 drift gillnet and 18 set gillnet). The majority of Area T permit holders that fish Alaska Peninsula waters are fishing within the Cinder River and Inner Port Heiden Sections for coho salmon in August and September. Area T effort also occurs in the Cinder River Section during June for chinook and occasionally sockeye along with predominantly local Port Heiden Area T permit holders that fish in the Inner Port Heiden Section (Figure 13).

In 1986, Area T fishers started operating in the Ilnik and Outer Port Heiden Sections. In 1990, the Board of Fisheries eliminated Area T fishers from the Ilnik Section (except inside Ilnik Lagoon) and closed the Outer Port Heiden Section to all commercial fishing operations by both Area M and Area T fishers due to concern over potential interception of coho salmon bound for Inner Port Heiden (Meshik River).

BOARD OF FISHERIES REGULATION CHANGES

Board of Fisheries regulation changes instituted in the Northern District promoted by concern for potential interception of salmon are summarized in Table 7.

MANAGEMENT STRATEGY

The Bear River, Three Hills, and Ilnik Sections are managed on the basis of catch per unit effort indicators and relative abundance of fish as determined by escapement surveys and weir counts. Table 8 briefly depicts the sockeye stocks used to manage these three sections. This description is not a detailed management strategy, but a general account of the factors that are considered when management actions are taken.

Bear River and Three Hills Sections

The Bear River and Three Hills Sections are managed on the basis of Bear and Sandy River sockeye salmon stocks (Table 8). When the escapement objectives in Bear and Sandy Rivers are not being met, the Bear River and Three Hills Sections may be closed until escapements respond adequately to warrant a fishery. If escapement objectives are not lagging dramatically and harvests indicate sufficient run strength, then the closed waters at the river terminus may be expanded in order to obtain the escapement objectives, while allowing effort on incoming fish outside the protected area. This prevents a build-up of fish near the river mouths and a resulting excess number of fish moving up river. If escapement into Ilnik and/or Ocean River (if Ocean River flows into the Bering Sea versus Ilnik Lagoon which occurs approximately every 6 years) are lacking and area closures in the Ilnik Section are not effective, the eastern portion of the Three Hills Section line may be moved to the west to provide for a larger closed water area in an attempt to increase the escapement.

Ilnik Section

The Ilnik Section, including the area outside of Ilnik Lagoon, is managed prior to July 16 for Ilnik sockeye stocks (Table 8). Time and area closures may be considered prior to July 16 if there are conservation concerns for Bear, Sandy, Ilnik, or Ugashik Rivers. If Bear and Ugashik River sockeye runs are expected to meet escapement requirements, fishing time in the Ilnik Section will be determined by Ilnik River escapement. Post July 15, the Ilnik Section is managed for Bear River sockeye stocks if escapements are met at Ilnik and Ugashik Rivers (Table 8). However, if Ilnik, Bear, or Ugashik runs are late and escapement requirements are not being met, an extension past July 15 may be needed to ensure escapement to these systems. In 1995, the Ilnik sockeye interim escapement goals were lagging with no surplus for harvest. In the Ilnik Section, post July 4, harvests were limited to one 18-hour period on July 5 within the entire Ilnik Section to Unangashak Bluffs and one 7-hour period on July 8, only inside Ilnik Lagoon. From mid August to mid September the Ilnik Section is managed on the basis of Ilnik River coho salmon.

OUTLOOK FOR 1996

The projected 1996 commercial salmon harvest for the North Peninsula are: chinook salmon 15,000, sockeye 2,600,000, 180,000 coho, 200,000 pink, and 200,000 chum salmon. The bulk of the projected sockeye harvest (2,300,000 fish) is expected to occur in the Port Moller to Strogonof Point area.

LITERATURE CITED

ADF&G (Alaska Department of Fish and Game). 1995. 1995-96 Alaska Peninsula, Atka-Amlia, and Aleutian Islands Areas Commercial Salmon and Miscellaneous Finfish Fishing Regulations. Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau.

Murphy, R.L. 1992. Number of salmon systems and distribution of escapements in the Alaska Peninsula and Aleutian Islands Management Areas, 1986-91. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K92-15, Kodiak.

Table 1. Scheduled North Peninsula fishing periods, 1995.

SECTION	OPEN SEASON	FISHING PERIOD
Cinder River, outside Cinder River Lagoon.	August 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Cinder River, inside Cinder River Lagoon	May 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Outer Port Heiden	No open season	
Inner Port Heiden	May 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Ilnik Section outside Ilnik Lagoon between Three Hills and Loran C line 9990-Y-33265 running off of Ilnik (Unangashak) Bluffs.	July 5 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Remainder of the Ilnik Section between Loran C line 9990-Y-33265 and Strogonof Point.	July 15 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Ilnik Section inside Ilnik Lagoon	May 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Three Hills	June 25 - June 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Three Hills	July 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Thursday
Bear River	May 1 - June 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
Bear River	July 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Thursday
Port Moller Bight	May 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Thursday
Herendeen-Moller Bay	May 1 - July 20	6:00 a.m. Monday to 6:00 p.m. Thursday
Nelson Lagoon	May 1 - June 15	6:00 a.m. Monday to 12:00 Midnight Wednesday
Nelson Lagoon	June 16 - August 15	6:00 a.m. Monday to 12:00 midnight Thursday
Nelson Lagoon	August 16 - September 30	6:00 a.m. Monday to 12:00 Midnight Wednesday
Caribou Flats	No open season	

-Continued-

Table 1. (page 2 of 2)

SECTION	OPEN SEASON	FISHING PERIOD
Black Hills	May 1 - June 30	6:00 a.m. Monday to 6:00 p.m. Wednesday
	July 1 - September 30	6:00 a.m. Monday to 6:00 p.m. Thursday
Izembek-Moffet Bay	June 1 - August 10	6:00 a.m. Monday to 6:00 p.m. Thursday
Swanson Lagoon	June 1 - August 10	6:00 a.m. Monday to 6:00 p.m. Thursday
Urilia Bay	June 28 - August 10	6:00 a.m. Monday to 6:00 p.m. Thursday
Dublin Bay	July 10 - August 10	6:00 a.m. Monday to 6:00 p.m. Thursday
Bechevin Bay	June 1 - September 30	By Emergency Order Only

Table 2. Northern District sockeye salmon runs, 1962-1995[a].

Year		Outer Port Heiden[b] and Cinder River	Inner Port Heiden	Three Hills & Ilnik	Bear River	Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals
1962	Catch	900	17,800	9,700	142,900	0	69,600	0	240,900
	Escapement	5,000	(19,000)	5,900	215,000	100	54,200	1,000	300,200
	Total	5,900	(36,800)	15,600	357,900	100	123,800	1,000	541,100
1963	Catch	0	0	26,600	120,000	0	71,500	0	218,100
	Escapement	1,400	(14,200)	10,400	238,600	100	31,000	(1,300)	297,000
	Total	1,400	(14,200)	37,000	358,600	100	102,500	(1,300)	515,100
1964	Catch	0	6,300	33,300	107,500	0	88,700	0	235,800
	Escapement	1,500	10,000	(6,500)	250,200	200	80,000	1,500	349,900
	Total	1,500	16,300	(39,800)	357,700	200	168,700	1,500	585,700
1965	Catch	0	9,700	58,400	62,400	100	53,800	0	184,400
	Escapement	7,500	30,000	(12,500)	137,000	0	37,000	500	224,500
	Total	7,500	39,700	(70,900)	199,400	100	90,800	500	408,900
1966	Catch	0	8,000	11,000	152,600	0	60,000	0	231,600
	Escapement	3,000	(11,700)	24,300	185,000	600	36,500	2,300	263,400
	Total	3,000	(19,700)	35,300	337,600	600	96,500	2,300	495,000
1967	Catch	0	3,100	0	156,100	12,500	40,200	0	211,900
	Escapement	(3,800)	(12,000)	26,400	200,000	200	42,000	(500)	284,900
	Total	(3,800)	(15,100)	26,400	356,100	12,700	82,200	(500)	496,800
1968	Catch	0	0	78,600	90,500	3,400	51,100	0	223,600
	Escapement	4,100	(15,000)	(15,000)	166,000	400	31,000	(2,000)	233,500
	Total	4,100	(15,000)	(93,600)	256,500	3,800	82,100	(2,000)	457,100
1969	Catch	0	5,200	24,000	205,500	4,400	72,800	0	311,900
	Escapement	(3,800)	(15,000)	(15,600)	406,000	100	78,500	(2,500)	521,500
	Total	(3,800)	(20,200)	(39,600)	611,500	4,500	151,300	(2,500)	833,400
1970	Catch	0	0	21,000	113,700	1,700	52,000	0	188,400
	Escapement	1,500	14,100	16,100	294,000	0	82,400	1,400	409,500
	Total	1,500	14,100	37,100	407,700	1,700	134,400	1,400	597,900
1971	Catch	0	0	57,100	238,600	1,300	47,500	0	344,500
	Escapement	2,000	30,800	26,500	281,000	200	60,100	500	401,100
	Total	2,000	30,800	83,600	519,600	1,500	107,600	500	745,600
1972	Catch	0	0	12,000	136,200	1,000	23,200	0	172,400
	Escapement	400	3,500	13,100	135,400	0	28,000	0	180,400
	Total	400	3,500	25,100	271,600	1,000	51,200	0	352,800
1973	Catch	0	0	16,700	117,700	3,300	23,900	0	161,600
	Escapement	1,200	7,200	16,000	130,100	0	18,700	0	173,200
	Total	1,200	7,200	32,700	247,800	3,300	42,600	0	334,800
1974	Catch	0	0	50,700	157,500	7,700	25,600	0	241,500
	Escapement	1,300	1,400	14,600	266,500	0	39,900	1,800	325,500
	Total	1,300	1,400	65,300	424,000	7,700	65,500	1,800	567,000
1975	Catch	0	600	8,700	165,700	3,700	51,500	0	230,200
	Escapement	900	5,100	40,800	310,000	100	138,600	2,000	497,500
	Total	900	5,700	49,500	475,700	3,800	190,100	2,000	727,700
1976	Catch	0	5,000	219,700	310,900	9,900	74,900	0	620,400
	Escapement	6,300	30,300	15,700	328,000	500	108,900	7,400	497,100
	Total	6,300	35,300	235,400	638,900	10,400	183,800	7,400	1,117,500
1977	Catch	0	3,400	97,900	268,700	11,100	56,300	0	437,400
	Escapement	3,900	23,600	20,700	265,200	13,500	155,000	4,100	486,000
	Total	3,900	27,000	118,600	533,900	24,600	211,300	4,100	923,400
1978	Catch	0	800	32,200	556,400	53,700	213,400	0	856,500
	Escapement	3,800	18,800	21,200	814,000	4,900	304,300	1,500	1,168,500
	Total	3,800	19,600	53,400	1,370,400	58,600	517,700	1,500	2,025,000
1979	Catch	100	36,900	194,400	1,320,900	32,100	320,900	0	1,905,300
	Escapement	6,000	(46,700)	97,500	1,013,000	5,000	360,100	3,000	1,531,300
	Total	6,100	(83,600)	291,900	2,333,900	37,100	681,000	3,000	3,436,600

-Continued-

Table 2. (page 2 of 2)

Year		Outer Port Heiden[b] and Cinder River	Inner Port Heiden	Three Hills & Ilnik	Bear River	Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals
1980	Catch	0	24,600	252,200	741,900	10,500	318,500	0	1,347,700
	Escapement	30,000	(47,000)	(100,000)	751,000	1,500	352,600	3,900	1,286,000
	Total	30,000	(71,600)	(352,200)	1,492,900	12,000	671,100	3,900	2,633,700
1981	Catch	0	3,800	68,900	1,327,200	18,600	374,700	0	1,793,200
	Escapement	100,000	(26,600)	(151,000)	741,500	600	251,000	(4,000)	1,274,700
	Total	100,000	(30,400)	(219,900)	2,068,700	19,200	625,700	(4,000)	3,067,900
1982	Catch	0	8,800	142,500	1,009,300	11,300	229,200	400	1,401,500
	Escapement	(13,000)	(62,000)	(43,000)	361,300	500	179,600	6,000	665,400
	Total	(13,000)	(70,800)	(185,500)	1,370,600	11,800	408,800	6,400	2,066,900
1983	Catch	100	100	729,600	1,126,200	15,000	192,900	0	2,063,900
	Escapement	9,000	8,600	40,100	358,000	500	128,800	2,600	547,600
	Total	9,100	8,700	769,700	1,484,200	15,500	321,700	2,600	2,611,500
1984	Catch	0	1,700	743,700	637,400	31,400	118,800	0	1,533,000
	Escapement	16,000	31,100	22,300	414,000	700	251,000	600	735,700
	Catch	16,000	32,800	766,000	1,051,400	32,100	369,800	600	2,268,700
1985	Catch	300	5,100	978,200	821,300	4,500	703,500	0	2,512,900
	Escapement	12,600	45,500	22,700	451,500	700	314,800	3,700	851,500
	Total	12,900	50,600	1,000,900	1,272,800	5,200	1,018,300	3,700	3,364,400
1986	Catch	700	38,000	1,148,800	938,200	1,300	178,400	0	2,305,400
	Escapement	25,700	26,400	66,900	279,400	300	117,900	2,300	518,900
	Total	26,400	64,400	1,215,700	1,217,600	1,600	296,300	2,300	2,824,300
1987	Catch	200	2,400	719,400	214,000	700	128,500	100	1,065,300
	Escapement	15,300	28,300	30,700	266,700	700	155,700	8,700	506,100
	Total	15,500	30,700	750,100	480,700	1,400	284,200	8,800	1,571,400
1988	Catch	600	10,000	753,600	495,000	3,900	186,600	0	1,449,700
	Escapement	2,000	35,900	26,900	347,500	400	142,500	6,900	562,100
	Total	2,600	46,900	780,500	842,500	4,300	329,100	6,900	2,011,800
1989	Catch	3,000	13,400	749,000	557,800	5,700	325,000	14,300	1,668,200
	Escapement	4,000	11,200	16,700	487,000	500	206,800	7,600	733,800
	Total	7,000	24,600	765,700	1,044,800	6,200	531,800	21,900	2,402,000
1990	Catch	1,200	9,700	942,900	876,200	4,300	410,400	13,300	2,258,000
	Escapement	14,000	26,800	35,800	564,300	400	269,200	5,700	916,200
	Total	15,200	36,500	978,700	1,440,500	4,700	679,600	19,000	3,174,200
1991	Catch	300	5,400	864,900	1,044,700	4,600	274,000	16,400	2,210,300
	Escapement	47,400	26,500	135,200	681,200	(500)	279,200	9,000	1,179,000
	Total	47,700	31,900	1,000,100	1,725,900	5,100	553,200	25,400	3,389,300
1992	Catch	4,500	8,000	1,700,200	1,398,300	5,900	378,700	900	3,496,500
	Escapement	15,200	33,100	45,100	471,200	200	179,700	16,600	761,100
	Total	19,700	41,100	1,745,300	1,869,500	6,100	558,400	17,500	4,257,600
1993	Catch	8,900	500	1,280,100	2,041,800	10,000	452,900	4,000	3,798,200
	Escapement	(20,000)	(50,000)	70,300	501,900	400	267,200	10,200	920,000
	Total	(28,900)	(50,500)	1,350,400	2,543,700	10,400	720,100	14,200	4,718,200
1994	Catch	5,200	600	1,320,500	1,059,000	2,200	329,200	1,200	2,717,900
	Escapement	83,400	44,900	75,300	581,200	400	333,400	5,100	1,123,700
	Total	88,600	45,500	1,395,800	1,640,200	2,600	662,600	6,300	3,841,600
1995	Catch	1,300	800	1,251,600	1,536,000	5,900	448,300	3,600	3,247,500
	Escapement	47,500	85,600	39,400	430,400	2,000	338,700	3,700	947,300
	Total	48,800	86,400	1,291,000	1,966,400	7,900	787,000	7,300	4,194,800

[a] Figures in parenthesis are extrapolated estimates. Except for Bear and Nelson Rivers where weir and tower counts are used, escapements are indexed totals.

[b] Outer Port Heiden Section catches occurred only between 1986 and 1989. This section has been closed since 1989.

Table 3. Sockeye salmon escapement goals by system, the 1991-95 average indexed escapement, and the 1995 escapement within the vicinity of the Nelson Lagoon to Strogonof Point reach.

System	Escapement Goal	1991-95 Average Indexed Escapement	1995 Escapement
Nelson River System	114,000-178,000	259,000	339,000
Bear River			
Early Run	120,000-135,000	280,000	197,000
Late Run	80,000-115,000	176,000	108,000
Total	200,000-250,000	456,000	305,000
Sandy River	40,000-60,000	77,000	125,000
Ilnik River	40,000-60,000	73,000	39,000
Meshik River	12,000-25,000	48,000	86,000
Total	406,000-573,000	913,000	894,000

Table 4. Escapement goal numbers and estimated percent run by date for selected North Peninsula sockeye salmon systems and estimated total run potential.

System	1991-95 Avg. Escapement (1,000's)	Escapement Run Timing[a]											Estimated Run (1,000's) Using R/S of 7.50 for Bear Late & 4.91[b] for others		
		Pre 6/15	6/15-20	6/20-25	6/25-30	7/1-5	7/5-10	7/10-15	7/15-20	7/20-25	7/25-30	Post 8/1	Estimated Total Run Potential	Range Using 80% Confidence Interval[c]	Estimated Potential Run Prior to 7/20
Bear River															
Early Run	280	3.3%	6.7%	16.6%	26.7%	13.3%	6.7%	10.0%	7.0%	5.0%	4.7%		1,375	1,131 - 1,624	1,021 - 1,467
Late Run	176										10.0%	90.0%	1,320[d]	1,023 - 1,607	0
Nelson River	259			24.0%	28.0%	16.7%	20.0%	4.0%	1.6%	1.0%	0.7%		1,272	1,046 - 1,502	1,028 - 1,477
Sandy River	77	5.0%	5.0%	10.0%	30.0%	23.4%	16.6%	7.0%	3.0%				378	311 - 447	311 - 447
Ilnik River	73	10.0%	5.0%	5.0%	20.0%	10.0%	35.0%	10.0%	5.0%				358	295 - 423	295 - 423
Totals	865[e]												4,703[fg]	3,806 - 5,603	2,655 - 3,814

[a] Nelson and Sandy Rivers are lagged 5 days in time to the Cape Seniavin area. Bear and Ilnik Rivers are lagged 2 days. Escapement timing is dependent on fishery performance, weather, and run, and may vary as much as 7-10 days.

[b] Run potential is based on a 5 year average escapement for each North Peninsula system and average return per spawner of 4.91:1, which is the most recent 5 year Bristol Bay (Kvichak, Naknek, Egegik, and Ugashik Rivers) combined weighted average. The recent 10 year average R/S of 3.88:1 was not used.

[c] Range is based on 80% confidence intervals around the mean R/S. Bristol Bay R/S using an 80% confidence interval was 4.04-5.80:1. The late Bear River run confidence intervals range from 5.81-9.13:1.

[d] For the Bear River late run (calculated post 7/31) R/S 1985-89 average of 7.50:1 was used, the 1980-89 average of 5.05 was not used.

[e] Does not include escapement into systems other than Bear, Nelson, Sandy, and Ilnik Rivers. Escapement into other systems averaged 178,000 sockeye from 1991-95.

[f] The total run does not include North Peninsula fish that are harvested in the South Peninsula June fishery, which ranges between 100,000-150,000 sockeye from 1991-95, and the post June South Peninsula harvest which is unknown and based on information from tagging studies which identified North Peninsula sockeye salmon in these fisheries (Gilbert 1923; Gilbert and Rich 1925; and Thorsteinson and Merrell 1964; Eggers et al 1991).

[g] Includes catch plus escapement. To obtain the potential harvest, the escapement must be subtracted from this number.

Table 5. North Peninsula salmon runs[a] by species, 1962-1995.

Year		Number of Fish					
		Chinook	Sockeye	Coho	Pink	Chum	Total
1962	Catch	5,400	249,700	35,200	31,200	34,900	356,400
	Escapement	4,400	351,200		4,000	150,900	
	Total	9,800	600,900		35,200	185,800	
1963	Catch	3,600	225,200	40,500	6,900	49,900	326,100
	Escapement	6,200	351,000		4,400	203,200	
	Total	9,800	576,200		11,300	253,100	
1964	Catch	3,600	250,800	36,600	6,800	139,000	436,800
	Escapement	25,900	419,900		(15,100)	156,100	
	Total	29,500	670,700		(21,900)	295,100	
1965	Catch	6,100	199,500	34,500	2,100	69,700	311,900
	Escapement	22,100	238,400		900	49,300	
	Total	28,200	437,900		3,000	119,000	
1966	Catch	5,600	245,300	37,300	16,000	82,800	387,000
	Escapement	8,200	283,300		2,000	149,000	
	Total	13,800	528,600		18,000	231,800	
1967	Catch	5,500	224,700	46,800	700	41,300	319,000
	Escapement	12,200	299,700		700	122,600	
	Total	17,700	524,400		1,400	163,900	
1968	Catch	4,500	237,100	64,900	200	73,500	380,200
	Escapement	15,800	251,300		26,500	250,800	
	Total	20,300	488,400		26,700	324,300	
1969	Catch	4,800	321,300	49,100	100	28,100	403,400
	Escapement	19,500	575,000		4,400	146,800	
	Total	24,300	896,300		4,500	174,900	
1970	Catch	3,800	187,800	26,300	7,900	48,000	273,800
	Escapement	8,300	451,500		11,100	169,800	
	Total	12,100	639,300		19,000	217,800	
1971	Catch	2,200	353,800	8,200	300	64,200	428,700
	Escapement	5,200	435,100		8,600	109,400	
	Total	7,400	788,900		8,900	173,600	
1972	Catch	1,800	179,300	9,700	100	84,700	275,600
	Escapement	5,000	190,200		1,300	124,000	
	Total	6,800	369,500		1,400	208,700	
1973	Catch	2,600	165,400	19,800	100	152,800	340,700
	Escapement	4,300	180,200		(200)	122,400	
	Total	6,900	345,600		(300)	278,100	
1974	Catch	2,700	246,200	16,800	10,600	34,400	310,700
	Escapement	3,000	332,800		(23,000)	105,100	
	Total	5,700	579,000		(33,600)	139,500	
1975	Catch	2,100	233,300	28,400	300	8,800	272,900
	Escapement	4,600	516,800		600	109,200	
	Total	6,700	750,100		900	118,000	
1976	Catch	5,000	641,100	26,100	700	73,600	746,500
	Escapement	6,000	532,600		37,300	293,400	
	Total	11,000	1,173,700		38,000	367,000	

-Continued-

Table 5. (page 2 of 3)

Year		Number of Fish					
		Chinook	Sockeye	Coho	Pink	Chum	Total
1977	Catch	5,500	472,000	34,100	900	129,100	641,600
	Escapement	7,100	541,100		8,500	681,200	
	Total	12,600	1,013,100		9,400	810,300	
1978	Catch	14,300	896,600	63,300	485,200	163,800	1,623,200
	Escapement	13,700	1,213,500		96,800	310,500	
	Total	28,000	2,110,100		582,000	474,300	
1979	Catch	17,100	1,979,200	112,800	5,000	65,700	2,179,800
	Escapement	15,800	1,574,000		9,300	305,300	
	Total	32,900	3,553,200		14,300	371,000	
1980	Catch	16,800	1,397,100	127,900	301,700	700,200	2,543,700
	Escapement	11,000	1,387,600		103,600	769,500	
	Total	27,800	2,784,700		405,300	1,469,700	
1981	Catch	18,900	1,844,300	155,400	11,200	706,800	2,736,600
	Escapement	12,400	1,347,900		6,100	535,200	
	Total	31,300	3,192,200		17,300	1,242,000	
1982	Catch	30,100	1,435,300	238,000	12,300	331,100	2,046,800
	Escapement	20,000	718,400		51,700	457,600	
	Total	50,100	2,153,700		64,000	788,700	
1983	Catch	29,500	2,093,400	75,100	3,400	348,700	2,550,100
	Escapement	25,700	580,300		4,000	392,600	
	Total	55,200	2,673,700		7,400	741,300	
1984	Catch	23,000	1,734,900	198,600	27,400	796,700	2,780,600
	Escapement	17,700	826,000		56,600	870,200	
	Total	40,700	2,560,900		84,000	1,666,900	
1985	Catch	23,500	2,596,100	176,100	3,100	666,600	3,465,400
	Escapement	12,900	898,100		1,400	344,200	
	Total	36,400	3,494,200		4,500	1,010,800	
1986	Catch	11,700	2,463,700	164,100	22,600	271,200	2,933,300
	Escapement	8,700	580,300		13,300	243,600	
	Total	20,400	3,044,000		35,900	514,800	
1987	Catch	14,200	1,209,400	171,800	3,500	368,700	1,767,600
	Escapement	10,700	556,000		100	510,900	
	Total	24,900	1,765,400		3,600	879,600	
1988	Catch	16,800	1,528,100	234,000	65,200	393,100	2,237,200
	Escapement	11,700	614,900	(200-300)[b]	43,500	500,300	
	Total	28,500	2,143,000	(434-534)[b]	108,700	893,400	
1989	Catch	10,900	1,718,700	227,600	4,100	157,200	2,118,500
	Escapement	5,600	814,400	(150-250)[b]	1,900	212,300	
	Total	16,500	2,533,100	377.6-477.6[b]	6,000	369,500	
1990	Catch	12,300	2,416,000	193,000	517,700	126,100	3,265,100
	Escapement	7,100	1,032,200	(140-175)[b]	132,200	226,400	
	Total	19,400	3,448,200	333.0-368.0[b]	649,900	352,500	

-Continued-

Table 5. (page 3 of 3)

Year		Number of Fish					
		Chinook	Sockeye	Coho	Pink	Chum	Total
1991	Catch	9,400	2,391,400	218,300	4,200	191,300	2,814,600
	Escapement	9,600	1,317,300		6,300	303,300	
	Total	19,000	3,708,700		10,500	494,600	
1992	Catch	13,100	3,575,500	206,800	194,400	341,600	4,331,400
	Escapement	6,600	861,300		207,600	351,700	
	Total	19,700	4,436,800		402,000	693,300	
1993	Catch	23,600	3,866,600	64,400	5,300	135,000	4,094,900
	Escapement	13,700	1,003,800		72,800	402,400	
	Total	37,300	4,870,400		78,100	537,400	
1994	Catch	19,000	2,752,900	241,200	225,400	116,000	3,354,500
	Escapement	38,400	1,211,400		133,200	480,200	
	Total	57,400	3,964,300		358,600	596,200	
1995	Catch	7,600	3,272,800	135,700	12,200	99,300	3,527,600
	Escapement	24,400	1,077,000		8,200	756,300	
	Total	32,000	4,349,800		20,400	855,600	

[a] Escapements are indexed totals. Figure in parenthesis are very rough extrapolated estimates.
[b] Numbers of fish in thousands.

Table 6. North Peninsula coho salmon catches by district and section, 1986 - 1995.

Section	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	10 year Average
Dublin Bay	0	0	0	0	0	0	0	0	0	0	0
Urilla Bay	3,300	7,600	4,800	0	1,300	0	0	3,200	4,900	2,200	2,730
Swanson Lagoon	22,000	8,300	12,300	7,000	4,600	18,900	3,900	300	100	1,800	7,920
Bechevin Bay	0	800	100	1,500	0	100	0	600	100	0	320
Izembek - Moffit Bay	0	2,900	3,000	100	0	0	0	0	12,300	1,700	2,000
Northwestern District Total	25,300	19,600	20,200	8,600	5,900	19,000	3,900	4,100	17,400	5,700	12,970
Black Hills	0	0	0	0	0	0	0	0	0	0	0
Caribou Flats	0	0	0	0	0	0	0	0	0	0	0
Nelson Lagoon	99,300	83,700	95,400	119,300	79,200	67,400	73,400	24,600	62,200	44,100	74,860
Herendeen - Moller Bay	0	0	0	0	600	200	0	0	700	100	160
Bear River	11,300	5,000	15,700	14,500	20,100	36,300	22,100	10,200	13,800	16,000	16,500
Three Hills	1,900	2,100	3,300	1,400	1,100	2,500	4,600	1,600	11,200	9,600	3,930
Ilnik	5,400	21,300	35,000	26,000	11,400	5,000	13,000	7,200	20,700	12,600	15,760
Inner Port Heiden	19,300	27,500	27,300	25,900	38,900	37,200	16,700	3,300	25,000	12,100	23,320
Outer Port Heiden	1,200	0	8,600	14,300	0	0	0	0	0	0	2,410
Cinder River	300	12,600	28,500	17,500	35,800	50,600	73,100	13,300	90,200	36,100	35,800
Northern District Total	138,700	152,200	213,800	218,900	187,100	199,200	202,900	60,200	223,800	130,600	172,740
NORTH PENINSULA TOTAL	164,000	171,800	234,000	227,500	193,000	218,200	206,800	64,300	241,200	136,300	185,710

Table 7. Northern District BOF regulation changes concerning potential interception of salmon.

Year	Board of Fisheries Regulation Changes
1988	Reduced the weekly fishing period in the Ilnik Section 24 hours to 6:00 a.m. Monday to 6:00 p.m. Wednesday over concern for Unangashak River coho and Ilnik River sockeye stocks.
1990	Closed the Outer Port Heiden Section to Area M and Area T permit holders over interception concerns for migrating coho into Port Heiden. Closed the outer portion of the Ilnik Section to Area T permit holders. Delayed the season opening in that portion of the Ilnik Section between Unangashak Bluffs and Strogonof Point from July 5 to July 15, over sockeye interception concerns with Bristol Bay.
1992	The minimum gillnet mesh size restriction of 5.25" was removed in the Bear River Section after July 20. The remainder of the North Peninsula minimum 5.25" gillnet mesh restriction remains in effect. Concern over the possible interception of specific Bristol Bay sockeye stocks prevented this regulation from extending to other areas on the North Peninsula.
1995	The minimum gillnet mesh restriction of 5.25" was removed in the Bear River, Port Moller Bight and Nelson Lagoon Sections to fully utilize local stocks. No large scale mesh change among fishers occurred during the 1995 season in the Nelson Lagoon Section.

Table 8. Sockeye salmon stocks used to manage three sections in the Northern District.

Section	Stocks	
	Pre-July 16	Post July 15
Bear River	Bear R., Sandy R.	Bear R., Sandy R.
Three Hills	Bear R., Sandy R., Ilnik R.	Bear R., Sandy R.
Ilnik	Ilnik R., Bear R., Sandy R. Ugashik R.[a]	Bear R., Sandy R., Ilnik R., Ugashik R.[b]

[a] Bear and Ugashik Rivers will be considered if a conservation concern exists.

[b] Bear, Ilnik, and Ugashik Rivers will be considered post July 15 if the runs are late and escapement requirements are not being met.

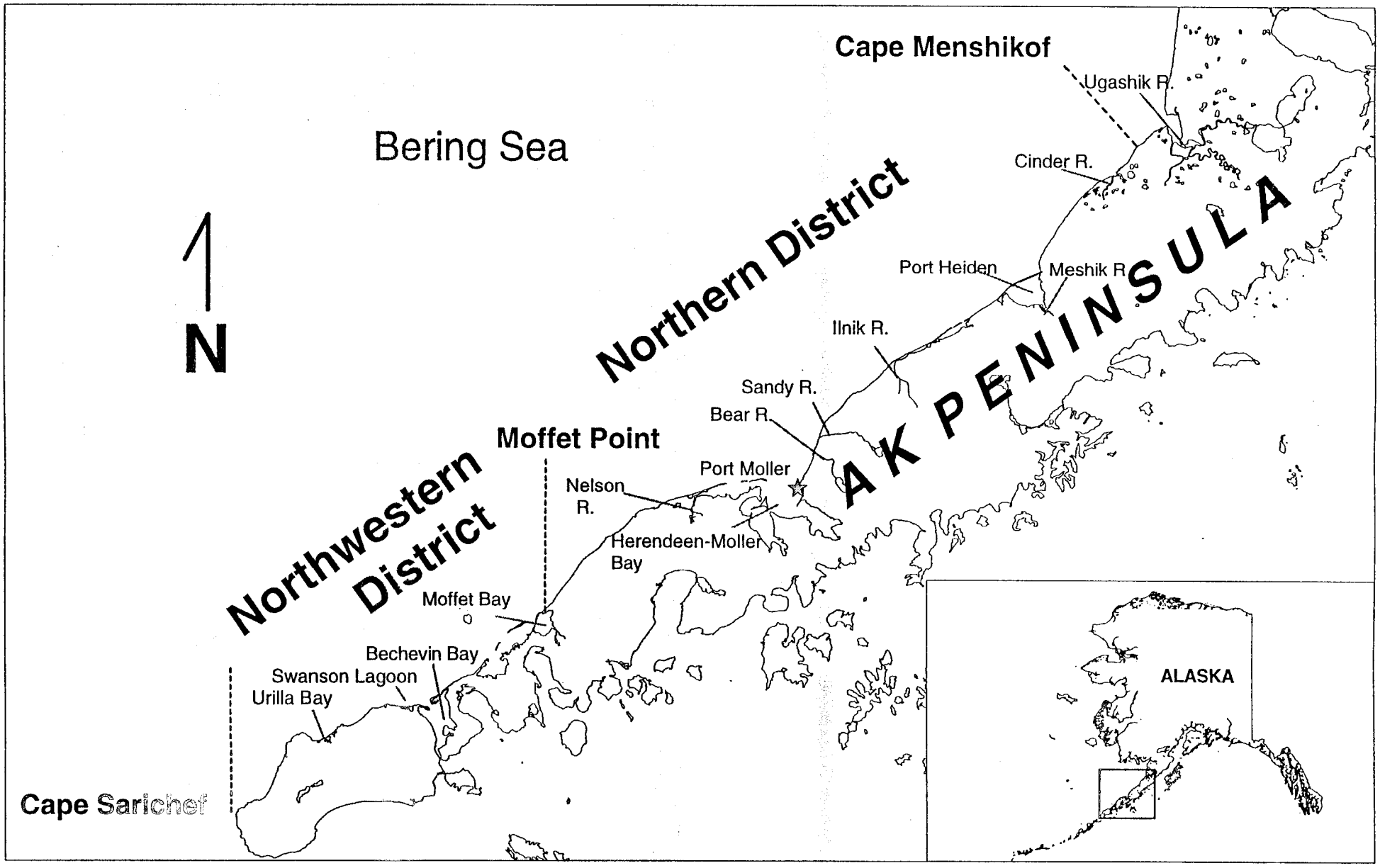
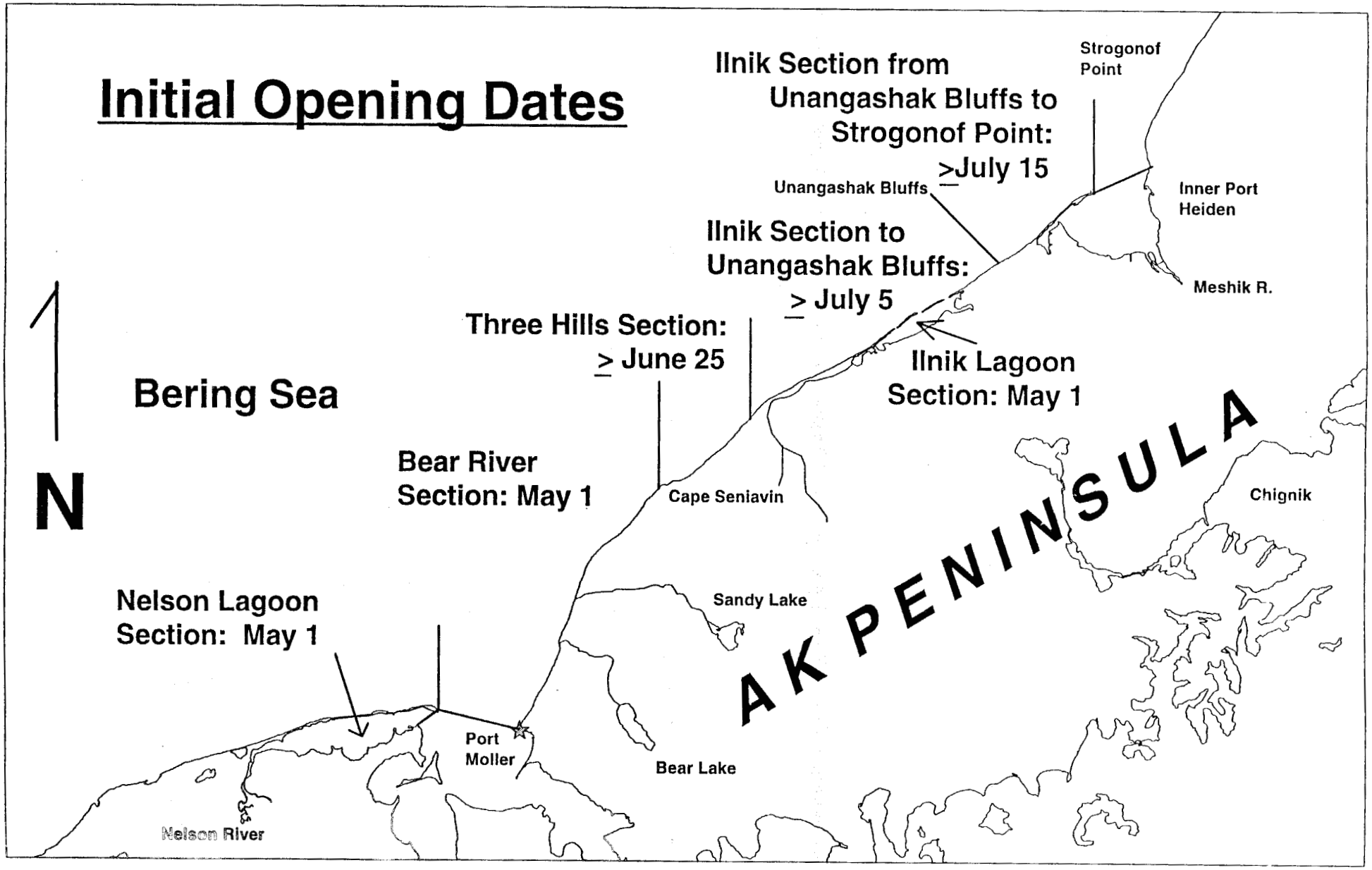


Figure 1. North and South Peninsula with North Peninsula districts depicted.



Nelson Lagoon to Strogonof Point reach, with district sections, commercial salmon season opening
s, and major sockeye salmon systems depicted.

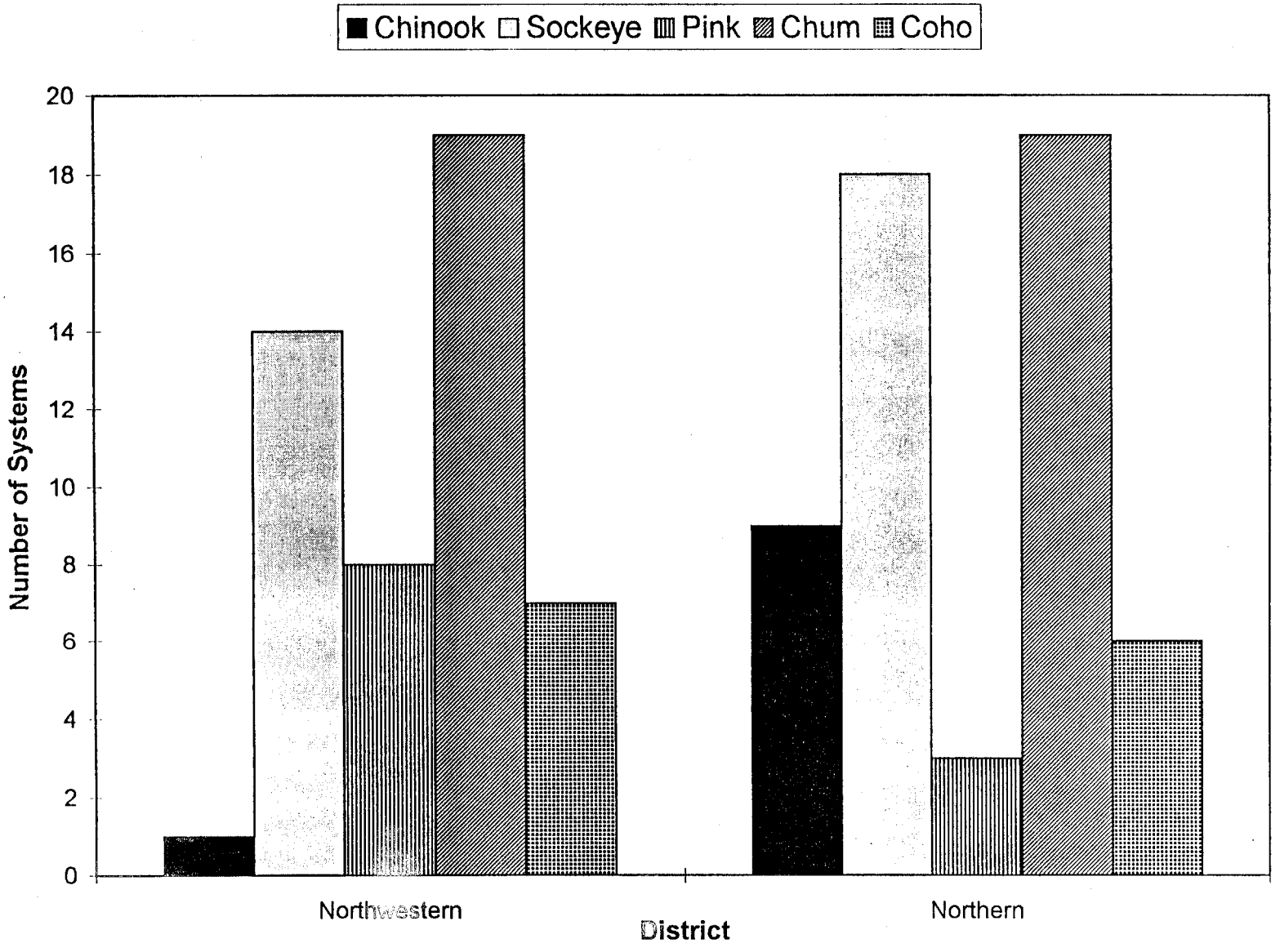


Figure 3. Number of salmon systems by species and district in the North Peninsula.

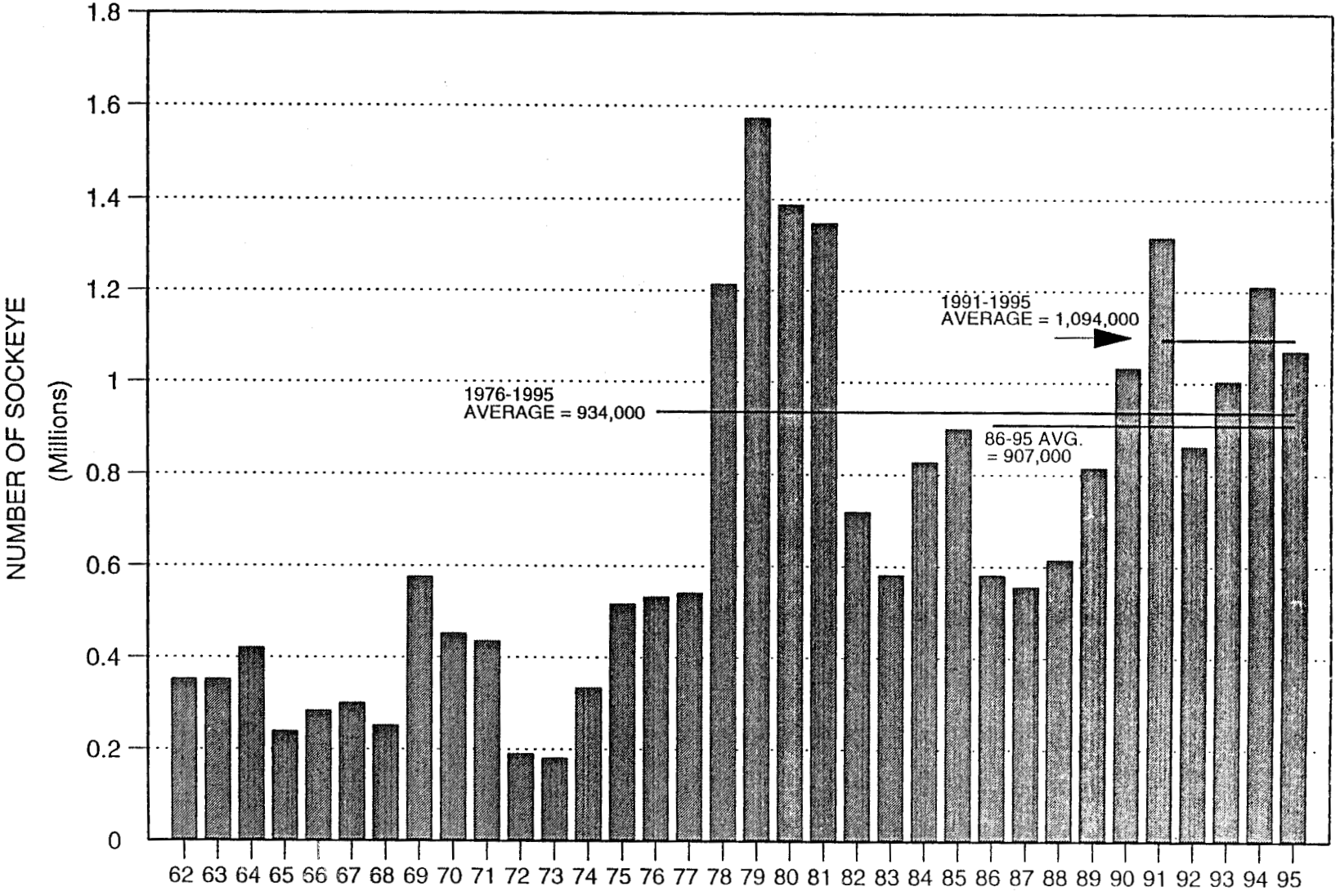


Figure 4. North Peninsula indexed sockeye salmon escapement, 1962-95.

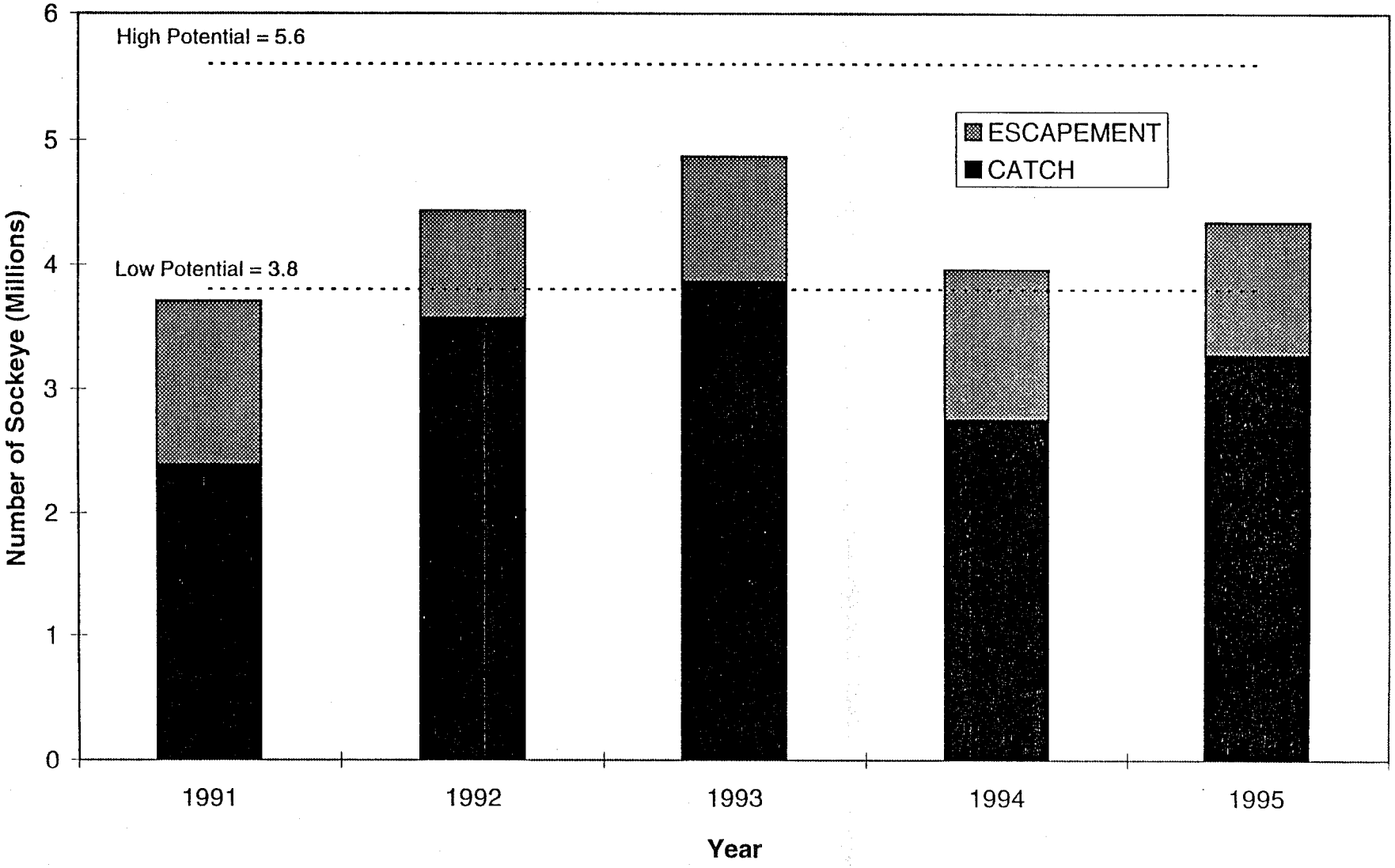


Figure 5. North Peninsula sockeye catch (shaded) and escapement (hatched) and estimated season run potential with low and high range estimates (dotted lines).

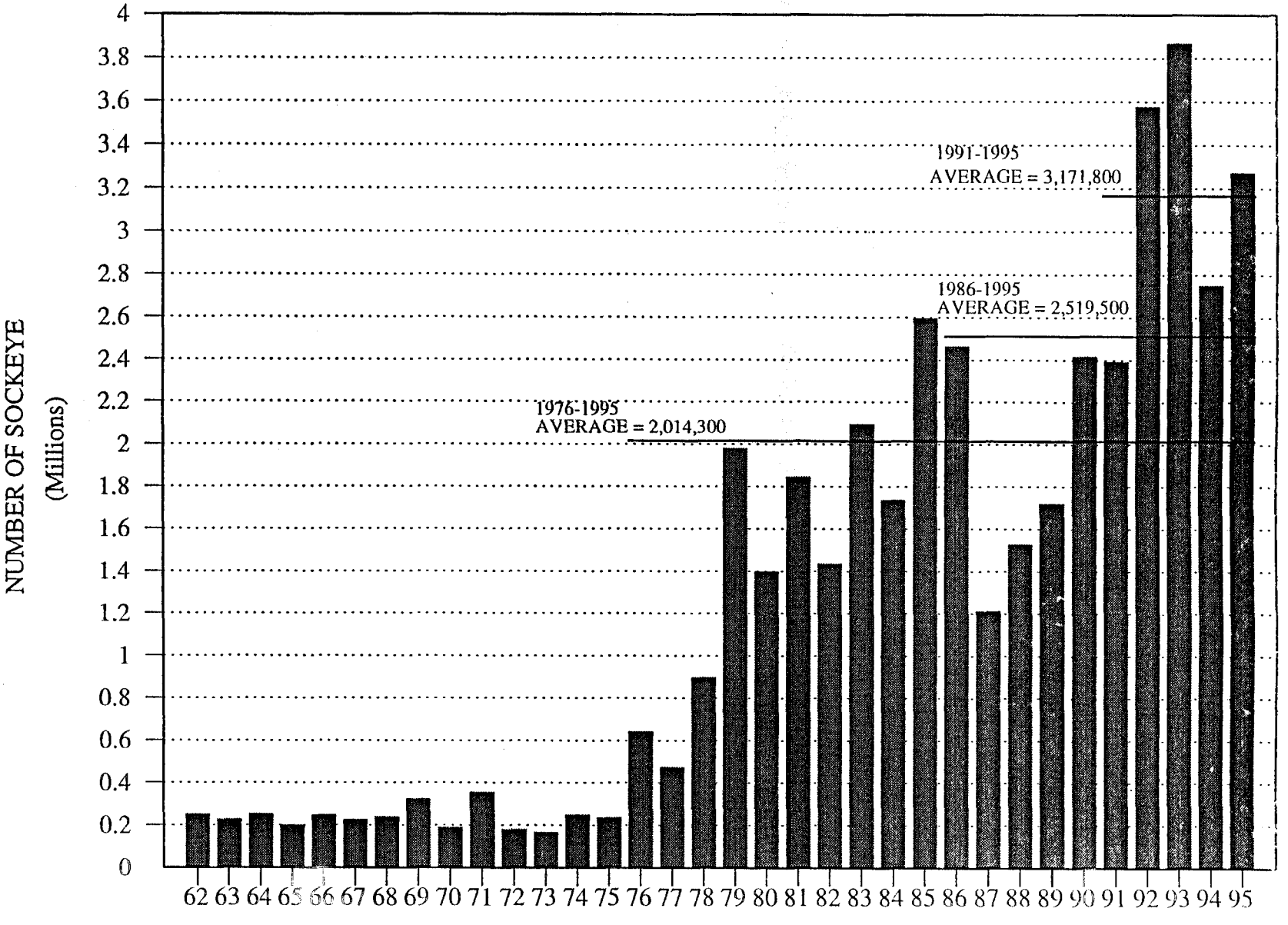


Figure 6. North Peninsula commercial sockeye salmon harvest, 1962-95.

94m-6294npen
12/14/95

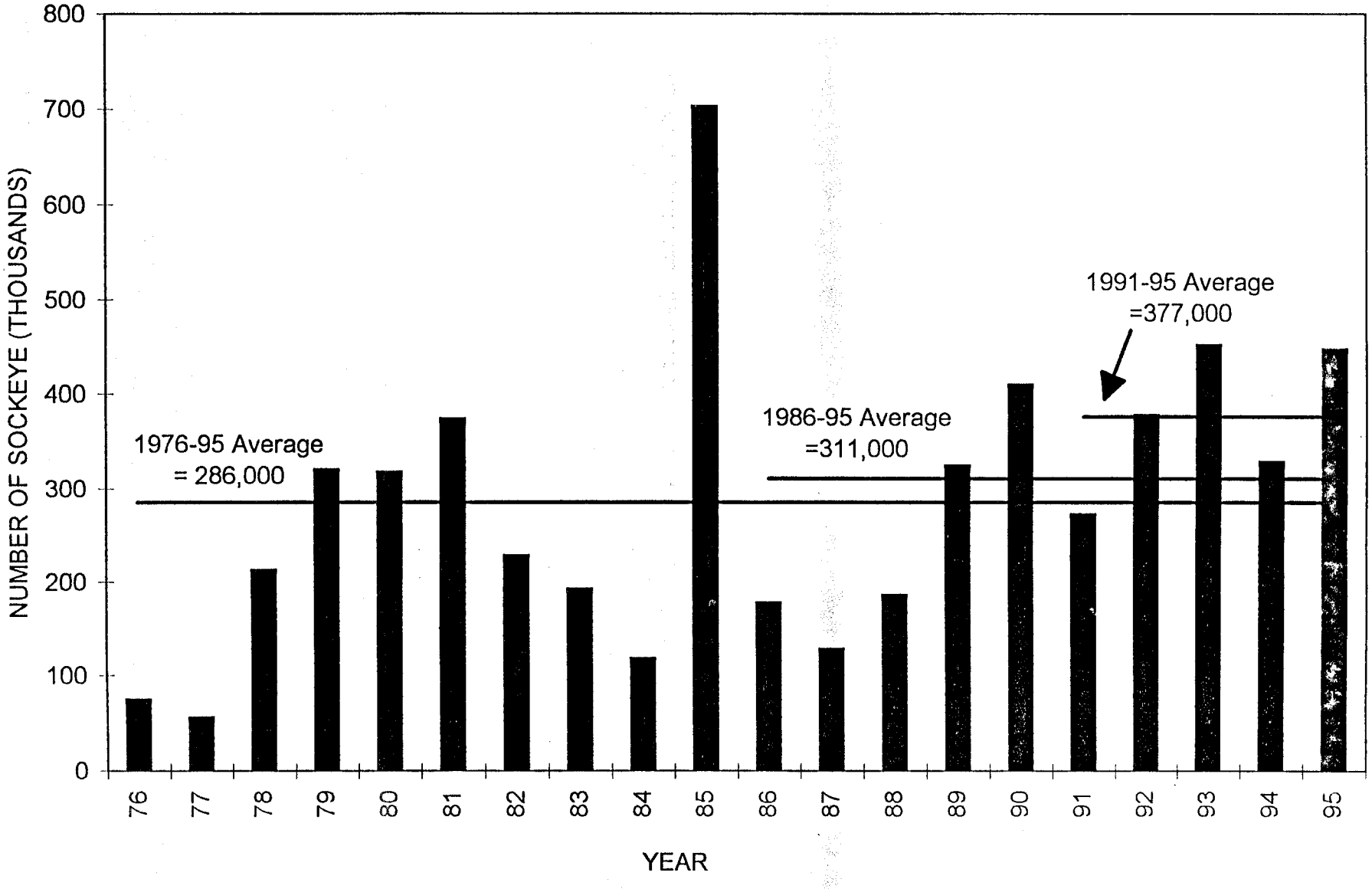


Figure 7. Nelson Lagoon commercial sockeye salmon harvest, 1976-95.

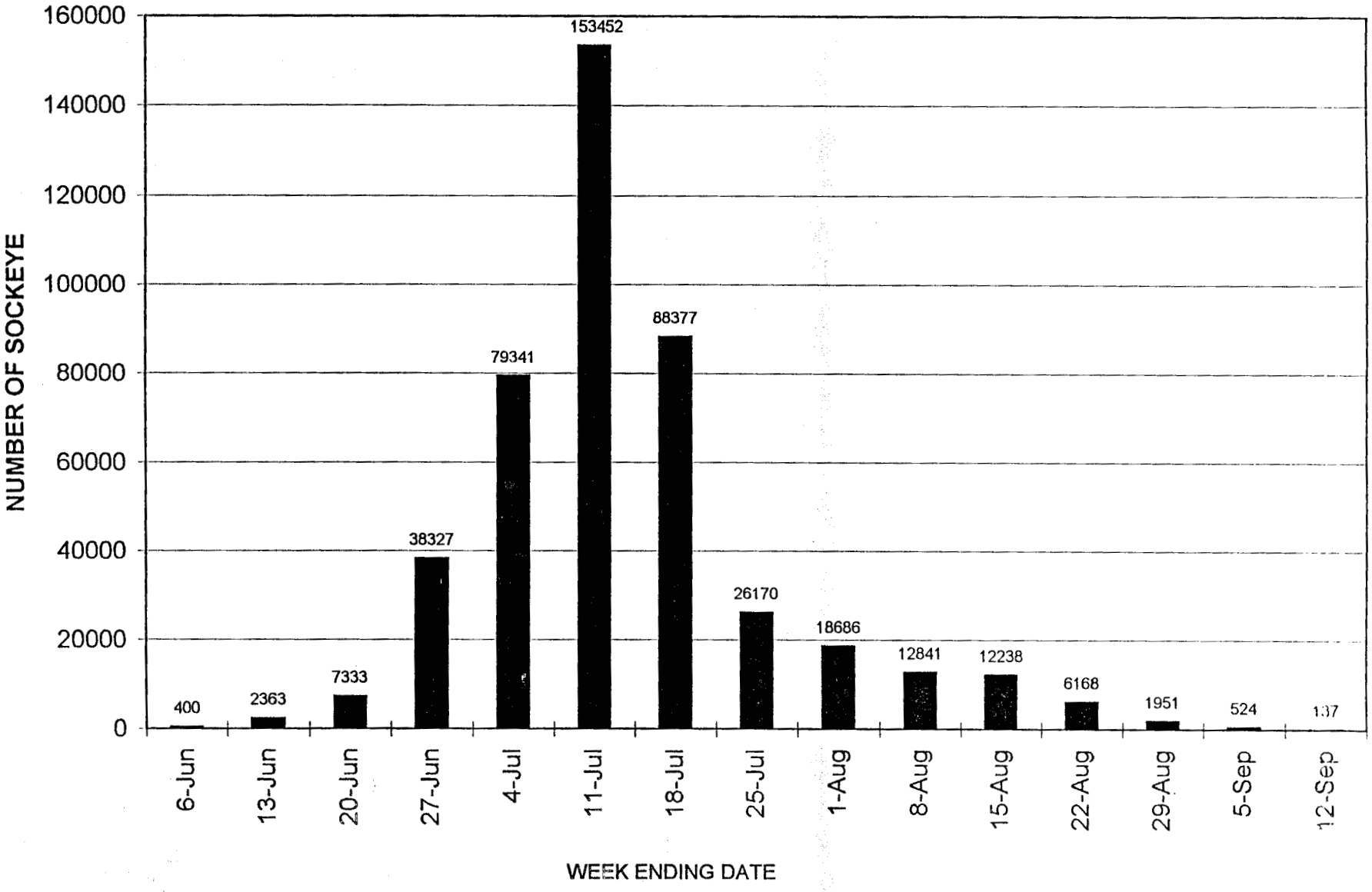


Figure 8. Nelson Lagoon commercial sockeye harvest by week, 1995.

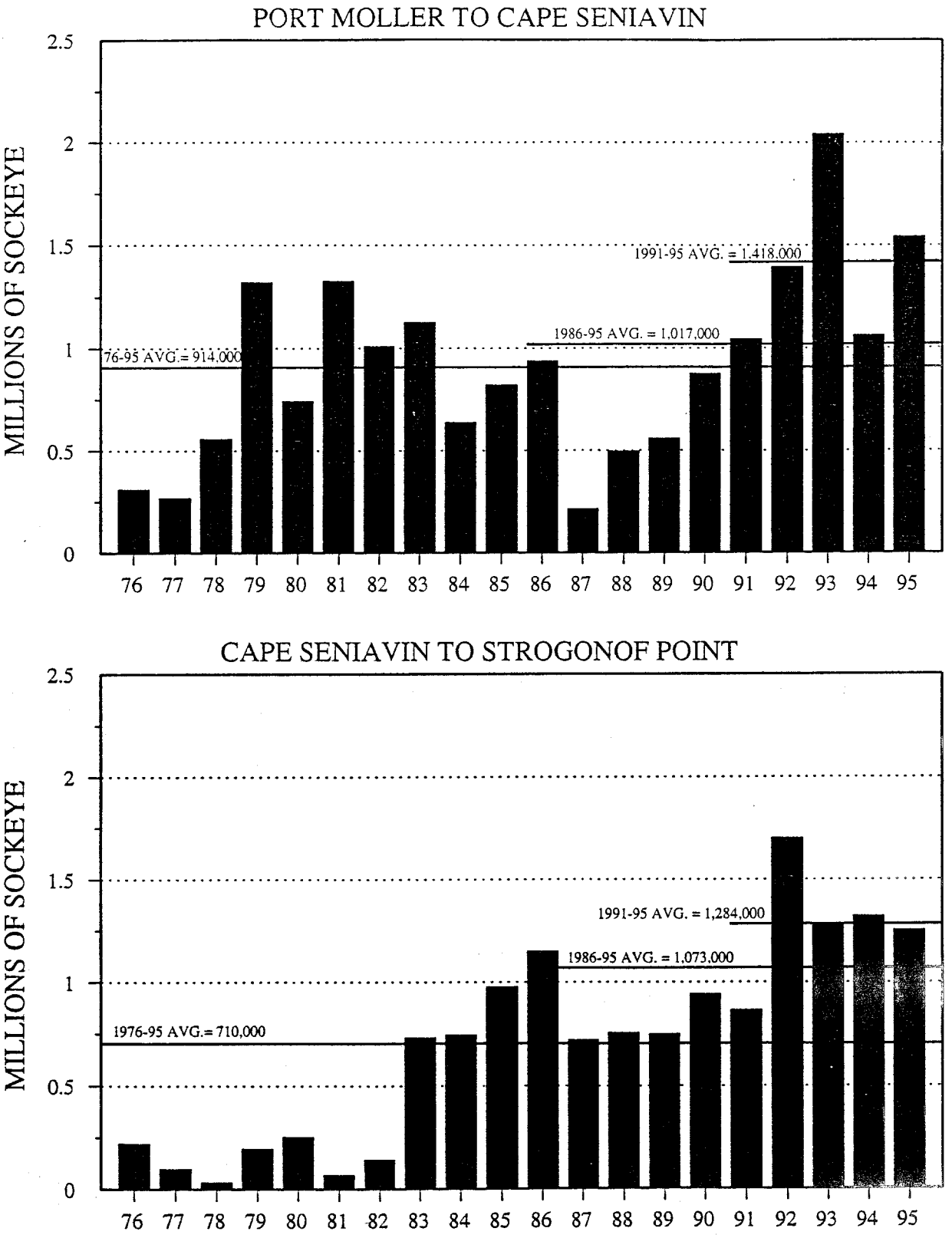


Figure 9. Port Moller to Strogonof Point commercial sockeye salmon harvest, 1976-95.

94m-molstrg
12/14/95

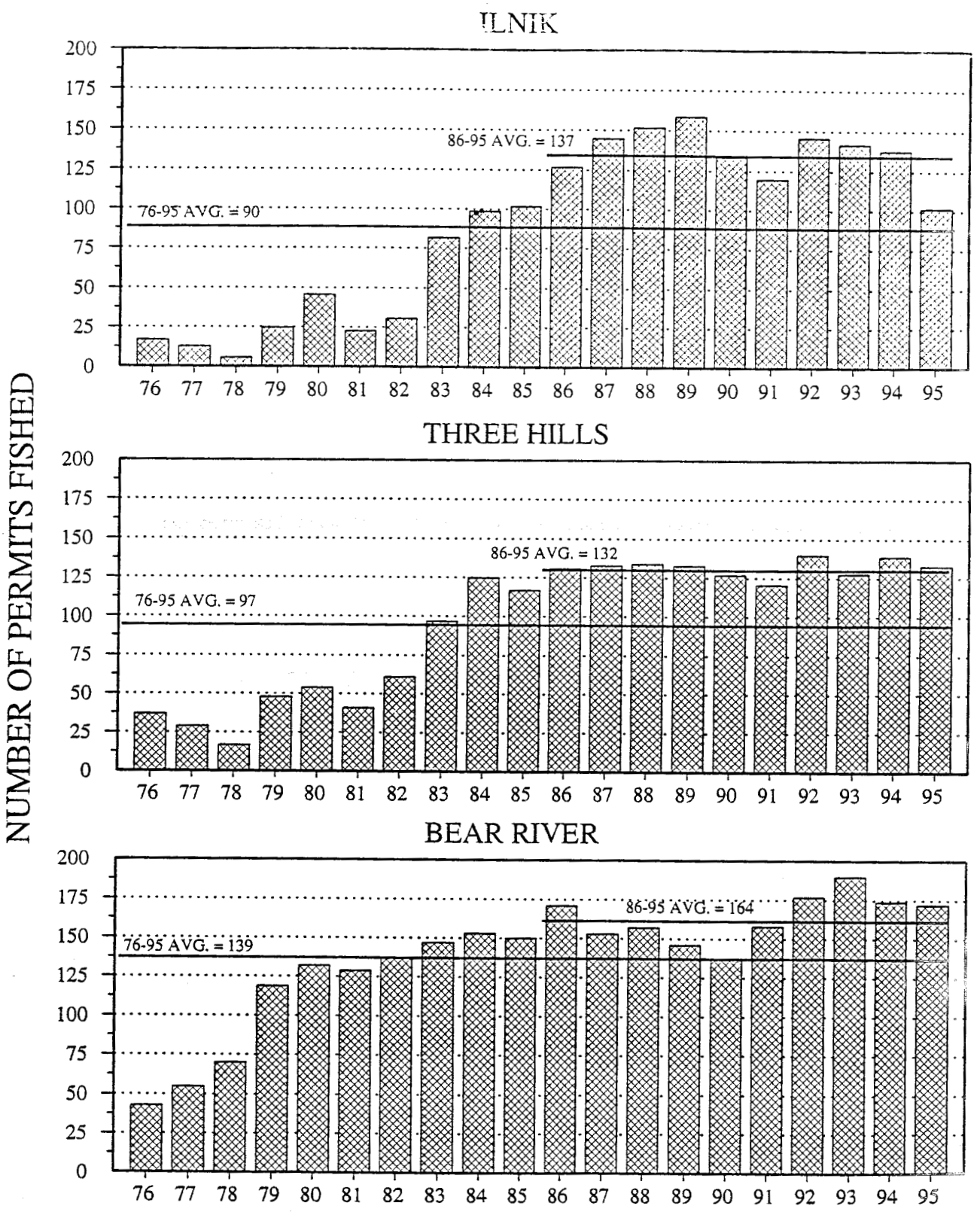


Figure 10. Number of commercial salmon permits fished in the Bear River, Three Hills, and Ilnik sections, 1976-95.

94m-7594pmts
12/14/95

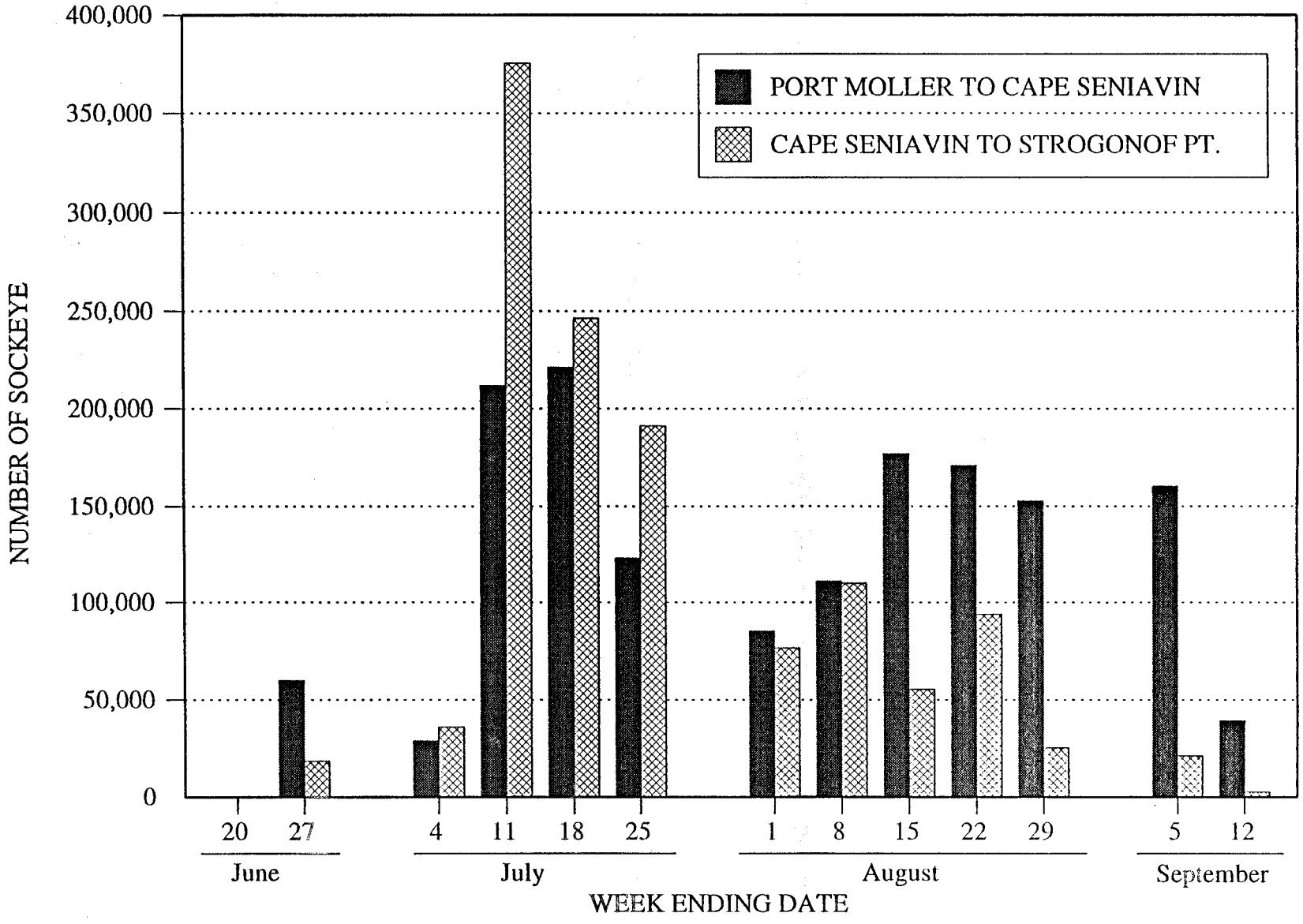


Figure 11. Port Moller to Strogonof Point sockeye salmon catch by week, 1995.

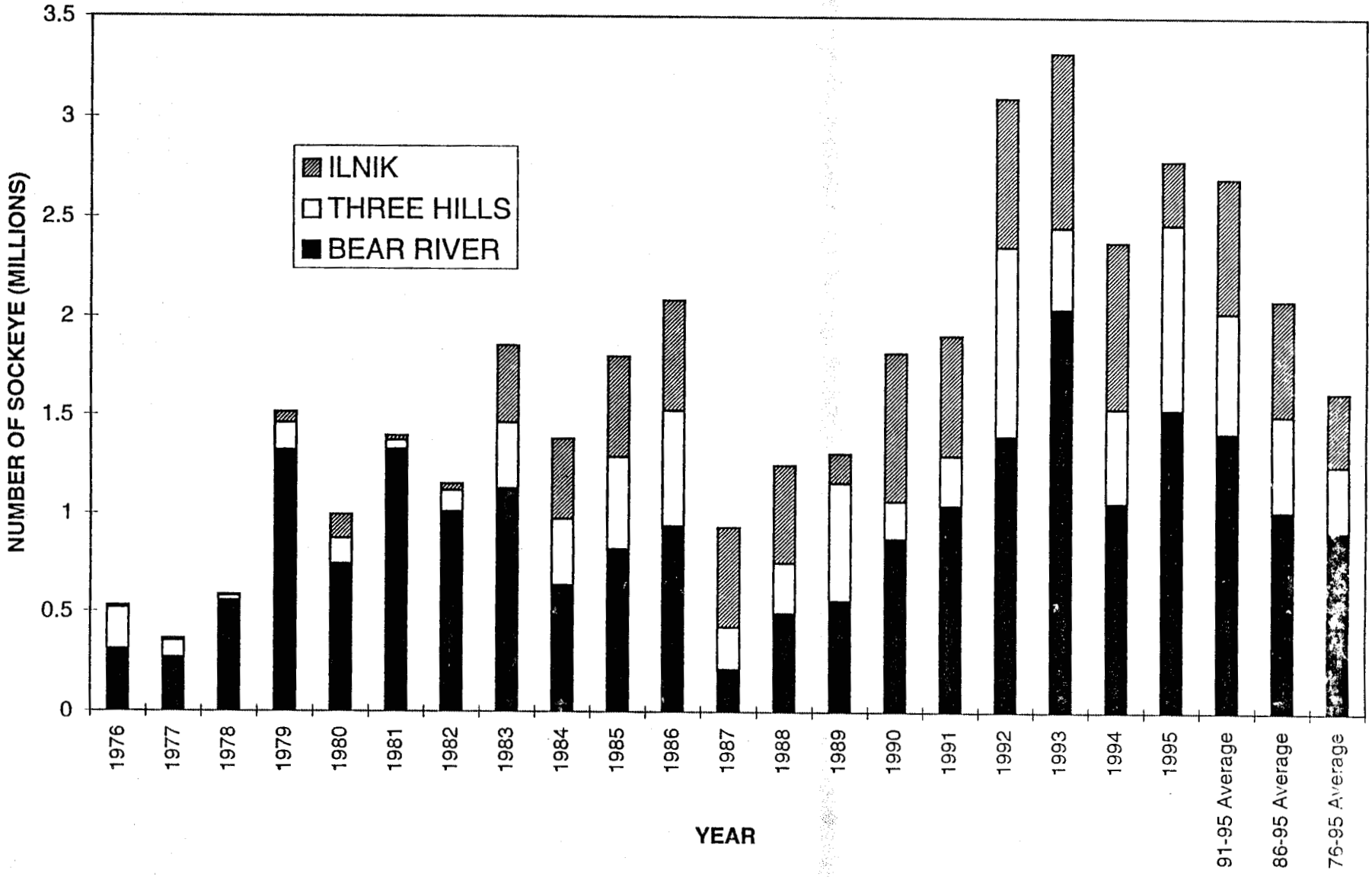


Figure 12. Commercial sockeye salmon harvest in the Bear River, Three Hills, and Ilnik Sections from 1976-95.

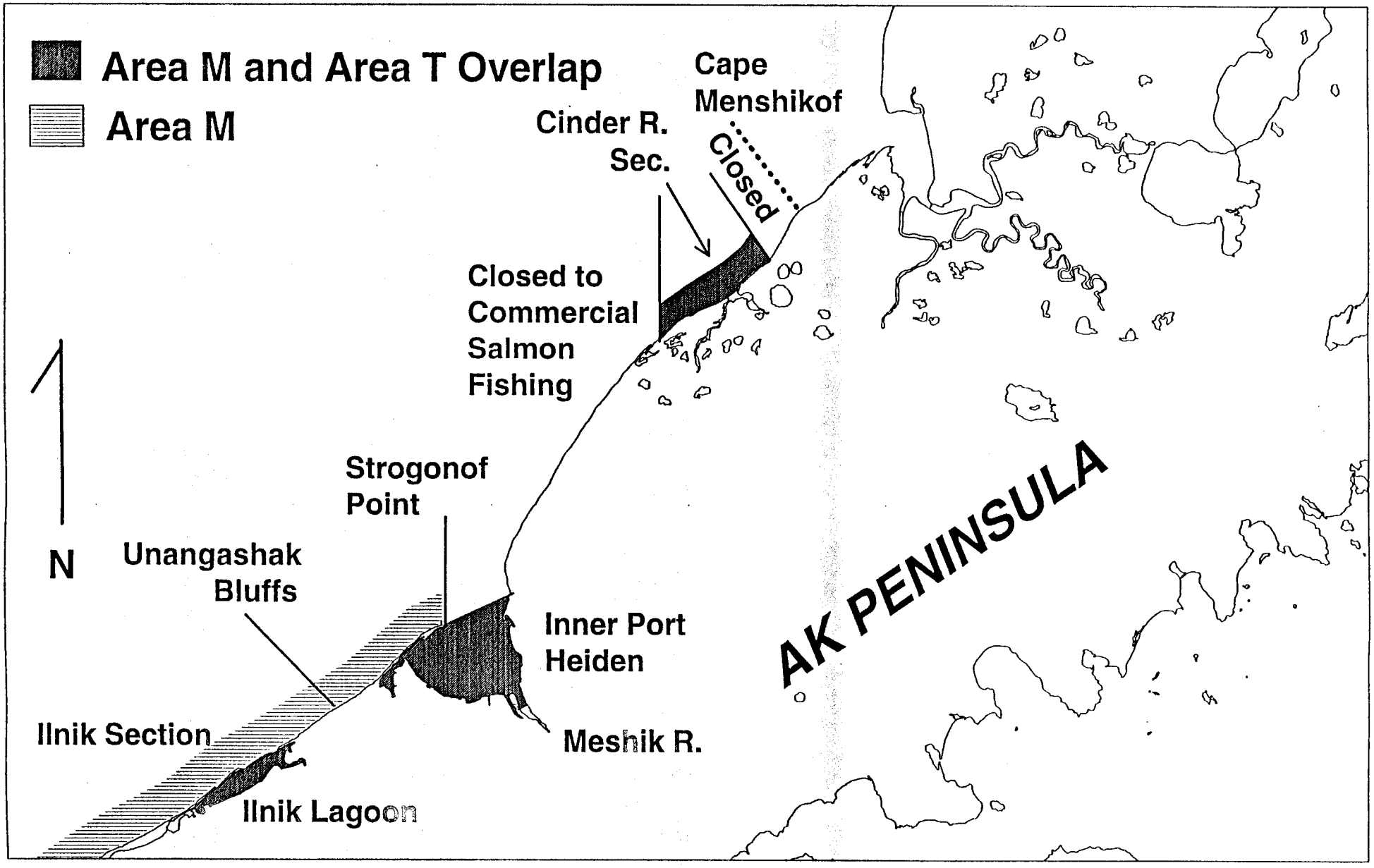


Figure 13. Alaska Peninsula (Area M) and Bristol Bay (Area T) Commercial salmon fishing overlap areas.